12084
Longlife™
Project-O-Chart®

Parts and Service Manual

Reichert
Ophthalmic Instruments

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PRODUCT CHANGES

Reichert reserves the right to make changes in design or to make additions to or improvements in its products without obligation to add such to products previously manufactured.

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NCT	Non-Contact	Phoroptor
P-O-C	Prelude	Premier
Project-O-Chart	Radiuscope	RxMaster
Selectra	Ultramatic	Vertometer
XPERT	XCEL	

CLAIMS FOR SHORTAGES

We use extreme care in selection, checking, rechecking and packing to eliminate the possibility of error. If any shipping discrepancies are discovered:

1 . Carefully go through the packing materials to be sure nothing was inadvertently overlooked when the unit was unpacked.
2. Call the distributor you purchased the product from and report the shortage. The contents of the shipping container are packed at the factory and none should be missing if the box has never been opened.
3. Claims should be filed within 30 days.

CLAIMS FOR DAMAGE IN TRANSIT

Our shipping responsibility ceases with the safe delivery in good condition to the transportation company. Claims for loss or damage in transit should be made promptly and directly to the transportation company.

If, upon delivery, the outside of the packing case shows evidence of rough handling or damage, the transportation company's agent should be requested to make a "Received in Bad Order" notation on the delivery receipt. If within 48 hours of delivery, concealed damage is noted upon unpacking the shipment and no exterior evidence of rough handling is apparent the transportation company should be requested to make out a "Bad Order" report. This procedure is necessary in order for the dealer to maintain the right of recovery from the carrier.

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SERVICE

This manual contains service information including schematic drawings and a complete listing of parts for the 12084 LongLife™ Project-O-Chart® and related mounts.

The service information provided in this manual has been prepared as an instructional guide for performing troubleshooting, field repair and routine maintenance of the 12084 LongLife P-O-C™. The instructions are designed to assist authorized repair and service technicians and require prior knowledge and experience with precision mechanical, optical and electronic test instruments. Therefore, for safety and continued high performance of this instrument, it is suggested that any repairs or service be performed by those authorized. Instructions for setup and use, in addition to directions on the care of this instrument, are given in the Instruction Manual 12084-101 which is packaged with the instrument or can be ordered through Reichert Ophthalmic Instruments 3374 Walden Ave. Depew, New York, 14043.

1. TROUBLESHOOTING CHART

SYMPTOM	POSSIBLE CAUSE
Correct size image cannot be obtained	1. P-O-C not positioned correctly - see instructions for proper positioning
Image cannot be focused	1. Lenses in projection tube improperly installed 2. May require auxiliary lens to be installed 3. If a mirror is used, the mirror is not an optical quality first surface mirror
Dim image or uneven illumination	1. Lamp not positioned correctly (See Section 2.7)
No light when turned on	1. Lamp burned out 2. Fuse blown 3. Check wall outlet - Is outlet on a wall switch? 4. Defective switch (See Section 2.6) 5. Defective lamp socket (See Section 2.4) 6. Defective electrical assembly (See Section 2.5)
Slide will not hold position or does not move smoothly	1. Adjust vertical slide sprocket (See Section 2.9)
Lamp flickers	1. Defective lamp socket (See Section 2.4) 2. Poor connection at one of the electric plugs

2. DISASSEMBLY, REASSEMBLY AND ADJUSTMENT

2.1 REAR COVER REMOVAL AND REPLACEMENT - Refer to Figure 3.

2.1.1 Unplug the power cord from the Project-O-Chart.

2.1.2 Using a tool, rotate the cam-lock (78) 1/4 turn counter-clockwise and remove the rear cover. The rear cover is replaced by placing the cover into position and rotating the cam-lock 1/4 turn clockwise.

2.2 FRONT COVER REMOVAL AND REPLACEMENT - Refer to Figures 2 and 3.

2.2.1 Remove the rear cover.

2.2.2 Remove the two mounting knobs (23).

2.2.3 Loosen the sprocket and spacer setscrew (18). This is accessible through a small hole in the rear plate near the electrical bracket.

2.2.4 Remove the two slide adjustment knobs. (1).

2.2.5 Remove the shaft (2) from clip (3) side. Sprocket (17) and friction springs, washer and spacer (14, 15, 16) remain in place.

2.2.6 Remove the four screws (22) which secure the front cover. The cover may now be spread apart to clear mounting bosses on slide adjustment casting. Pull cover forward and remove. Do this carefully to avoid marking projection tube.

2.2.7 The cover is replaced by reversing the above procedure. Check the operation of the sprocket mechanism using a slide. Adjust per 2.9 if needed.

2.3 PROJECTION TUBE DISASSEMBLY AND REASSEMBLY - Refer to Figure 2.

It is not normally necessary to disassemble the projection tube. After prolonged use (several years), depending on the environment, a film may form on the inside surfaces of the lenses. THE TUBE SHOULD ONLY BE DISASSEMBLED FOR CLEANING WHEN ABSOLUTELY NECESSARY.

2.3.1 Remove the projection tube from the projector by loosening the guide tube lock screw (20).

2.3.2 Remove the inner tube by loosening the outer tube lock screw (20).

2.3.3 Remove the two retaining rings (38).

2.3.4 Stand the tube upright on the end from which the retaining rings were removed and slowly lift the tube from the stack of lenses and spacers. NOTE: It is now advisable to mark the edges of the lenses using a soft pencil so that they can be replaced in the same order and with the same side up as in Figure 2.(32-37)

2.3.5 After the lenses are cleaned, place in a "stack" and slip the tube (32) down over the stack. Push the bottom spacer up and install retaining rings.

2.3.6 Use the same technique when disassembling the lens assembly in the large tube (24-27).

2.4 LAMP SOCKET REPLACEMENT - Refer to Figure 3.

2.4.1 Remove the rear cover

2.4.2 Unplug the lamp socket assembly (92) from the PC board.

2.4.3 Remove the two screws (94) which secure the lamp socket.

2.4.4 Pull the wires and connector through the hole in the bracket.

2.4.5 Feed the connector and wires of the new socket through the hole in the bracket and plug into PC board.

2.4.6 Attach the socket using the two screws.

2.5 ELECTRICAL ASSEMBLY REMOVAL AND REPLACEMENT - Refer to Figure 3.

2.5.1 Remove the rear cover.
2.5.2 Remove the screws (87) securing the bracket and remove the bracket.
2.5.3 Unplug the lamp socket assembly (92) from the PC board.
2.5.4 Remove the lamp socket plate (89) by turning the three adjusting screws (90) counter clockwise.
2.5.5 The electrical bracket assembly is replaced by reversing the above.
2.5.6 Reattach the lamp socket plate. The screws are self-tapping and may be difficult to start. USE CARE.
2.5.7 Lamp adjustment per 2.7 will be necessary.

2.6 SWITCH REPLACEMENT - Refer to Figure 3.

2.6.1 Remove the rear cover
2.6.2 Disconnect the wires from the switch (73) and remove the switch from the electrical bracket (86) by pressing firmly on the retaining wings on either side of the switch.
2.6.3 Replace the switch in reverse order. Make sure the switch is oriented correctly before seating.

2.7 LAMP ADJUSTMENT - Refer to Figure 3.

2.7.1 Remove the rear cover.
2.7.2 Re-connect power cord to projector and wall outlet.
2.7.3 Mark projection tubes to identify their positions.
2.7.4 Loosen lock screws (20,figure 2) and slide both tubes into unit as far as possible.
2.7.5 Turn on the projector and hold a card or piece of paper 1" (25mm) in front of the objective tube.
2.7.6 Adjust the three adjusting screws (90) so that the image of the filament is centered and in best focus.
2.7.7 Re-position projection tubes to their previous position and tighten lock screws.
2.7.8 Check for even fill of screen with no noticeable darkening in any corner of the screen. Readjust the three adjustment screws to correct any darkening.

2.8 CROSS SLIDE DETENT ADJUSTMENT - Refer to Figure 3.

2.8.1 Remove the rear cover.
2.8.2 Loosen the screw (54) and adjust pin (50) for proper loading. Tighten the screw for a more positive index.

2.9 VERTICAL SLIDE SPROCKET ADJUSTMENT

2.9.1 Remove rear cover.
2.9.2 Remove electrical bracket if needed (see 2.5 above).
2.9.3 Using a small hex wrench loosen the set screw (18) on the vertical slide sprocket (17) thru the sprocket adjusting hole in the rear plate.
2.9.4 Move sprocket until teeth line up with center of holes in vertical slide.
2.9.5 Tighten set screw.
2.9.6 Insert slide and check for smooth vertical motion of slide.
2.9.7 Repeat 2.9.3 - 2.9.6 as needed.
2.9.8 Insure that set screw is securely tightened and reattach electrical bracket if needed.
2.9.9 Check for proper lamp alignment and readjust per 2.7 if needed.

3. SETTING LINE VOLTAGE SELECTOR

The line voltage can be set for either 115 volt nominal operation or 230 volt nominal operation. The unit is shipped in the 115 volt position.

To select 230 volt operation remove the rear cover and slide the selector switch (71) to the 230 volt position. Replace the fuse (74) with a .25A/250V fuse. The fuse holder will accept either 3AG type fuses or 5 x 2mm fuses.

Make sure that a plug which meets applicable standards and codes for your area is attached to the cord, or replace the cord with an appropriate one.

4. ADJUSTING LAMP INTENSITY FOR DIFFERENT LINE VOLTAGES

The POC can be set to maintain optimum lamp intensity and life with different line voltages using two resistors (70) on the PC board. These resistors adjust the lamp voltage up or down by approximately 5%. The unit is shipped from the factory with one resistor bypassed and one in circuit. The life of the lamp decreases rapidly with higher than nominal input voltages, and its intensity may be lower than desired with lower input voltages. It is therefore advantageous to optimize the lamp intensity for different line voltages.

4.1 HIGH LINE VOLTAGES (120-130 OR 240-260 VOLTS)

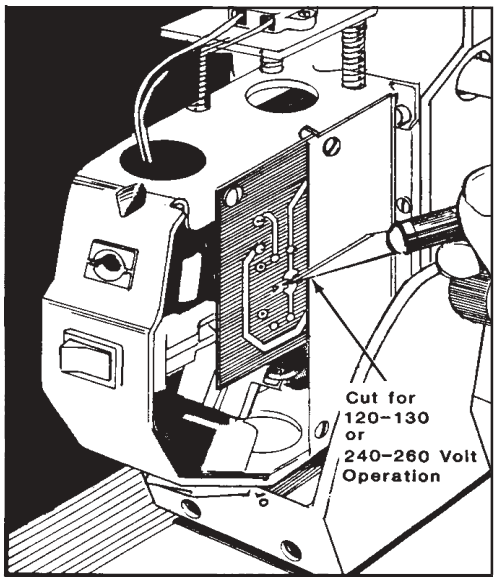
If the local line voltage is at least 10 volts greater than the nominal voltages mentioned in Section 3 (115 volts or 230 volts), refer to Figure 1 and locate the PC board trace on the back side of the PC board labeled “Cut for 120-130 or 240-260 Volt Operation.” The trace can be cut with a small utility knife. This process inserts an additional resistor in series with the lamp, lowering its intensity. Make sure to completely cut the trace between the two half circles.

4.2 LOW LINE VOLTAGES (100-110 OR 200-220 VOLTS)

Adjusting the POC for low line voltages is a little more difficult. Refer to Figure 1 and locate the two holes marked “Short for 100-110 or 200-220 Volt Operation” on the PC board. A small piece of wire must be soldered between these two holes.

The wire should be at least 24 AWG. It can be soldered thru the holes in the PC board or “tack soldered” on the bottom of the board. Use a low to moderate wattage “pencil” type soldering iron and solder intended for electrical use only.

This process shorts the second resistor in series with the lamp and delivers the full voltage of the transformer to the lamp. Check that all the work is clean and secure and replace the rear cover.



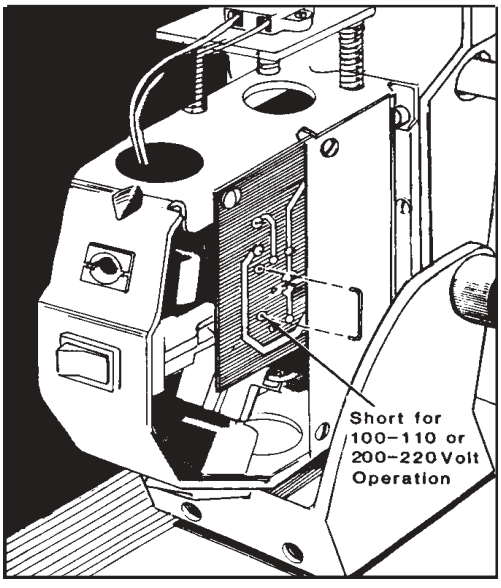


Figure 1

PARTS LISTING AND SCHEMATIC DRAWINGS

The schematic drawings provide an easy means of identifying and locating parts and are keyed to the parts list by the use of index numbers. To order a part, identify and locate the part by referring to these drawings and note the index number for the part. Refer to the parts list and locate the appropriate index number. The part number, description and quantity required will be found opposite the index number.

Parts should be ordered directly from an authorized Reichert Ophthalmic Instruments distributor. When ordering parts, be sure to include a complete description, part number and correct quantity.

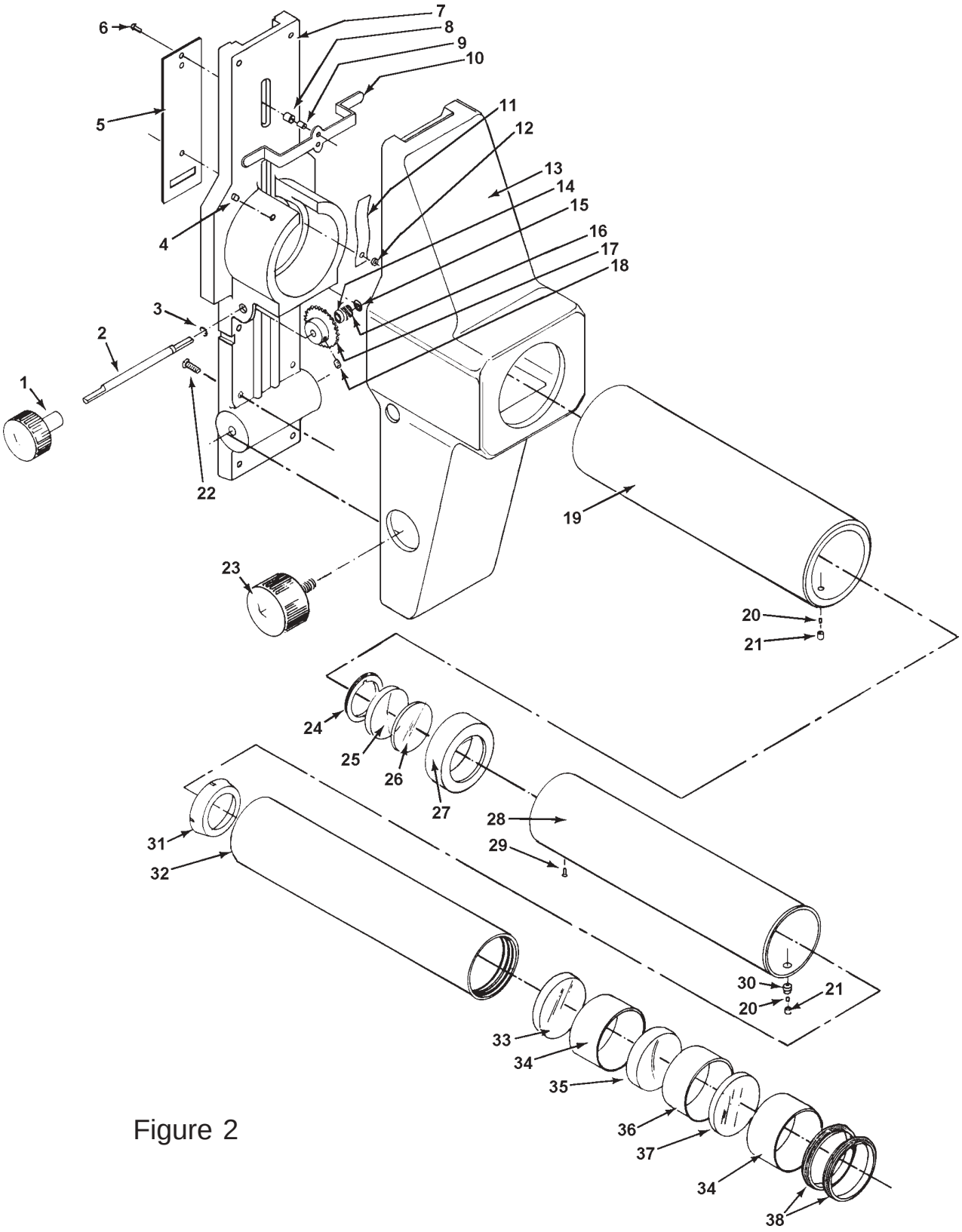

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Figure 2

12084 LONGLIFE PROJECT-O-CHART FRONT ASSEMBLY

INDEX #	PART #	DESCRIPTION	QUAN.
1	12084-012-001	Slide Adjusting Knob	2
2	11083-058	Slide Adjusting Shaft	1
3	X50368	Retaining Ring .250 Shaft, Slide Adjust	1
4	X20606	Stop Screw 6-32 x 1/4 Horiz. Mask	2
5	11085-258	Horizontal Slide Mask	1
6	X34062	Rivet Dch 120 x 343, Horiz. Mask	3
7	12084-014	Slide Housing	1
8	11083-031	Roller, Horiz. Mask	3
9	11083-032	Spacer, Horiz. Mask	3
10	12084-008	Lever, Horiz. Mask	1
11	11085-071	Friction Spring, Horiz. Mask	1
12	11085-265	Spacer, Horiz. Mask	1
13	12084-004	Front Cover	1
14	11083-054	Spacer	1
15	01037-001	Washer, Flat	1
16	X50584	Spring, Slide Sprocket	2
17	11083-041	Slide Sprocket	1
18	X20642	Set Screw, 6-32 x 1/8, Slide Sprocket	2
19	11083-015	Objective Guide Tube	1
20	11082-009	Lock Screw, Guide Tube	2
21	11082-010	Screw Insert, Guide Tube	2
22	X30744	Front Cover Mtg- Screw	4
23	12084-011-001	Mounting Knob	2
24	11082-868	Objective Assembly Complete (Includes Items 24 thru 40)	1
24	11082-013	Rear Retaining Ring, Back Obj.	1
25	11082-603	Back Objective Lens Negative	1
26	11082-604	Back Objective Lens Positive	1
27	11082-001	Back Cell	1
28	11082-002	Back Objective Lens Barrel	1
29	X76000	Screw Flat Head 2-56 x 3/1 6	1
30	11082-003	Threaded Insert, Bact, Obj. Lens	1
31	11082-017	Diaphragm, Front Obj. Lens	1
32	11082-004	Front Objective Lens Barrel	1
33	11082-605	Front Objective Back Crown Lens	1
34	11082-005	Rear Spacer, Front Obj.	2
35	11082-606	Front Objective Middle Flint Lens	1
36	11082-006	Front Spacer, Front Obj.	1
37	11082-607	Front Objective Front Crown Lens	1
38	11082-008	Retaining Ring	2

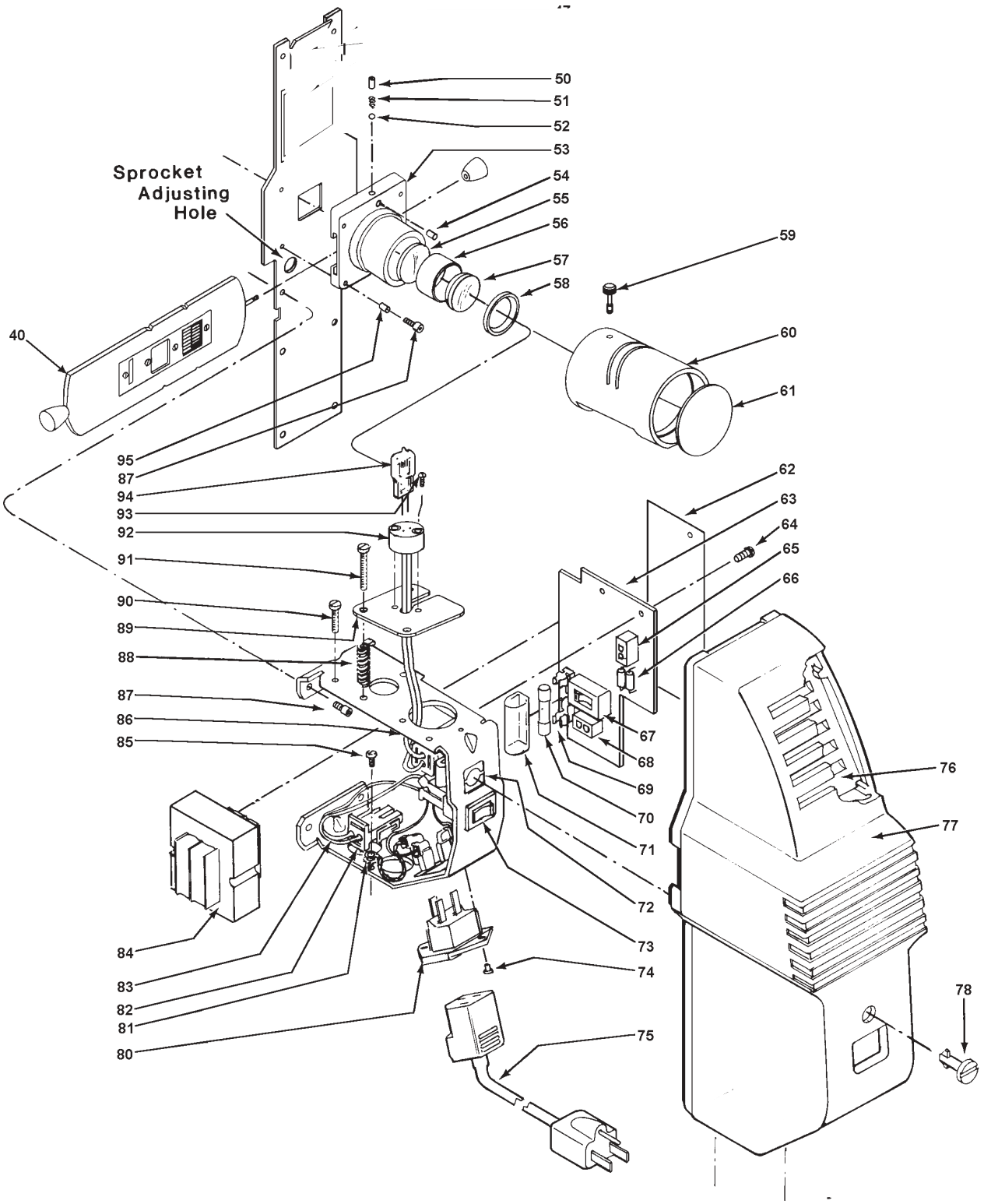
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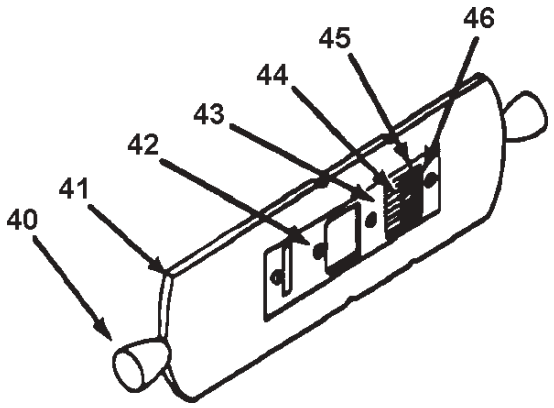
Figure 3

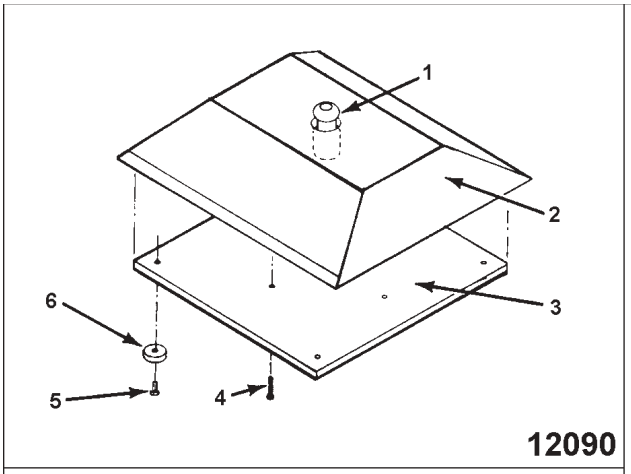
12084 LONGLIFE PROJECT-O-CHART REAR ASSEMBLY

INDEX #	PART #	DESCRIPTION	QUAN.
40	12084-851	Cross Slide Assy Complete (includes items 40 thru 46, see sheet 14)	1
47	12084-017	Slide Housing Cover	1
48	11083-051	Relamp Label	1
49	12084-007	ID Plate	1
50	11083-039	Cross Slide Spring Adjusting Rod	1
51	11083-034	Cross Slide Detent Spring	1
52	11083-052	Cross Slide Ball	1
53	12084-021	Condenser Holder	1
54	X20590	Set Screw, 4-40 x 1/8, Cross Slide	1
55	11082-602	Condenser Film Lens	1
56	11082-014	Condenser Spacer	1
57	11082-601	Condenser Lamp Lens	1
58	11082-015	Condenser Retaining Ring	1
59	12084-024	Captive Screw	1
60	12084-025	Reflector Support	1
61	11122-604	Reflector	1
62	12084-922	Electrical Assembly (Includes Items 66 thru 75 & 78 thru 86)	1
70	WFAG10018	Fuse 3AG .5Amp 250V (I 15V Operation)	1
70		Fuse 2mm x 5mm .25Amp 250V (230V Operation)	
75	WCBL10018	Power Cord	1
76	11083-033	Light Shield	1
77	12084-002	Rear Cover	1
78	11083-432-001	Rear Cover Fastener Stud	1
87	X76104	Elec. Assy. Mtg. Screw 6-32 x 3/8	4
88	11083-038	Lamp Adjusting Spring	3
89	12084-026	Lamp Mounting Plate	1
90	X76099	Insulator Mounting Screw	2
91	X76109	Lamp Adjusting Screw Pan Head	3
92	12084-921	Lamp Socket Assembly	1
93	X76085	Lamp Socket Mtg. Screw #4 x 3/8	2
94	11143-001	Projector Lamp	1
95	12084-019	Bushing	2

12084 LONGLIFE PROJECT-O-CHART CROSS SLIDE ASSEMBLY

INDEX #	PART #	DESCRIPTION	QUAN.
40	12084-851	Cross Slide Assembly Complete (includes items 40 thru 46)	1
40	11085-041	Cross Slide Knob	2
41	12084-005	Cross Slide Frame	1
42	X76192	Machine Screw, Cross Slide	3
43	11083-062	Filter Cover	1
44	11085-604	Green Filter	1
45	11085-603	Red Filter	1
46	11085-039	Cross Slide Filter Spring	1
-	11085-064	Dust Cover	1





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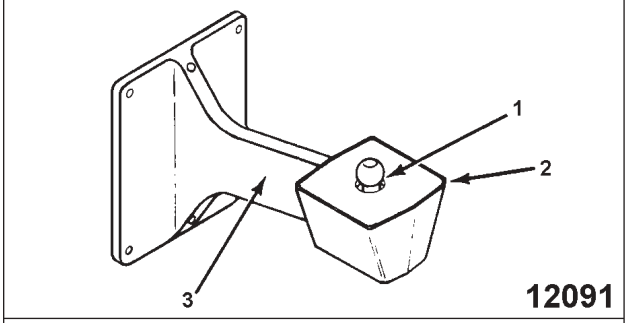

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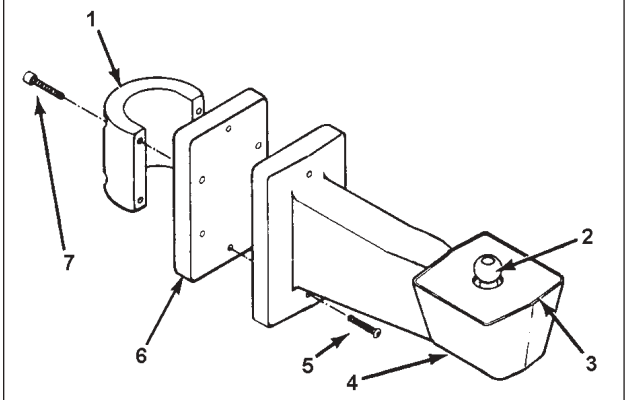

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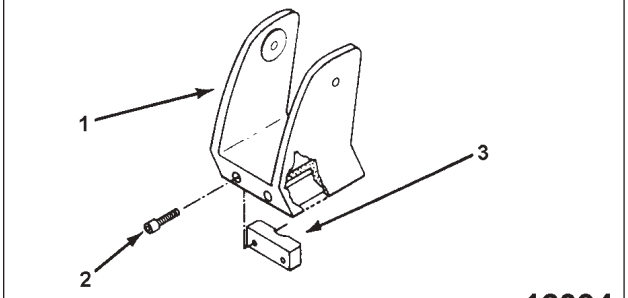

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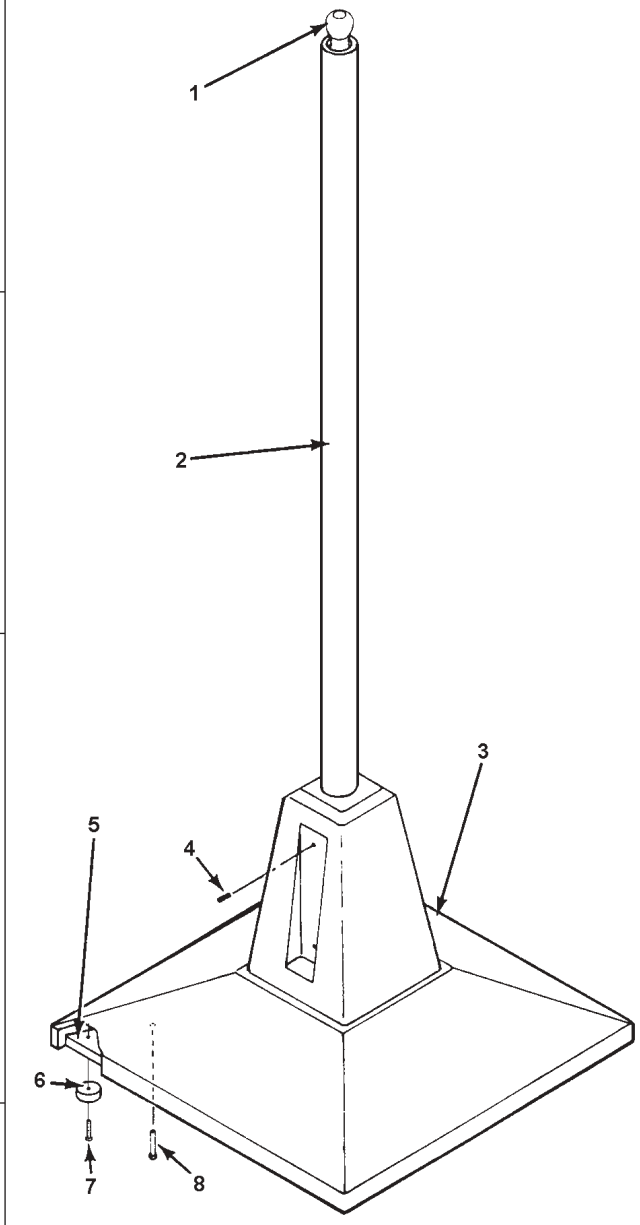

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12090 TABLE MOUNT

INDEX #	PART #	DESCRIPTION	QUAN.
1	11090-016	Pivot Pin	1
2	12090-001	Base	1
3	11090-019	Weight Plate	1
4	X9560	Screw, Self-Tapping 6-20 x 3/4	4
5	X20078	Screw, Cap 10-32 x 5/8	4
6	3330-047B	Rubber Foot	4

12091 WALL MOUNT

INDEX #	PART#	DESCRIPTION	QUAN.
1	11091-018	Pivot Pin	1
2	12091-005	Base Cover	1
3	12091-006	Wall Mount, Cast	1

12092 INSTRUMENT STAND

INDEX #	PART #	DESCRIPTION	QUAN.
1	12092-027	Clamp	1
2	11091-018	Pivot Pin	1
3	12091-030	Base Cover	1
4	12092-029	Base, Instrument Arm	1
5	X38715	Screw, Bracket to Adapter Plate	2
6	12092-028	Adapter Plate	1
7	X54079	Screw, Clamp to Adapter Plate	4

12096 FLOOR STAND

INDEX #	PART #	DESCRIPTION	QUAN.
1	11090-016	Pivot Pin	1
2	11093-002	Floor Stand Post	1
3	12096-002	Floor Stand Base Cover	1
4	X25268	Post Screw, 1/4-20 x 1/2	2
5	11093-006	Floor Stand Weight	1
6	3330-047B	RubberFoot	4
7	X20078	Screw, Cap 10-32 x5/8	4
8	X53984	Screw, Self Tapping #8	4

12094 YOKE

INDEX #	PART #	DESCRIPTION	QUAN.
1	12094-001	Mounting Fork	1
2	11090-013	Fork Insert	1
3	X20162	Fork Adjusting Screw 1/4-28 x 7/8	2

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